

FIG. 1A

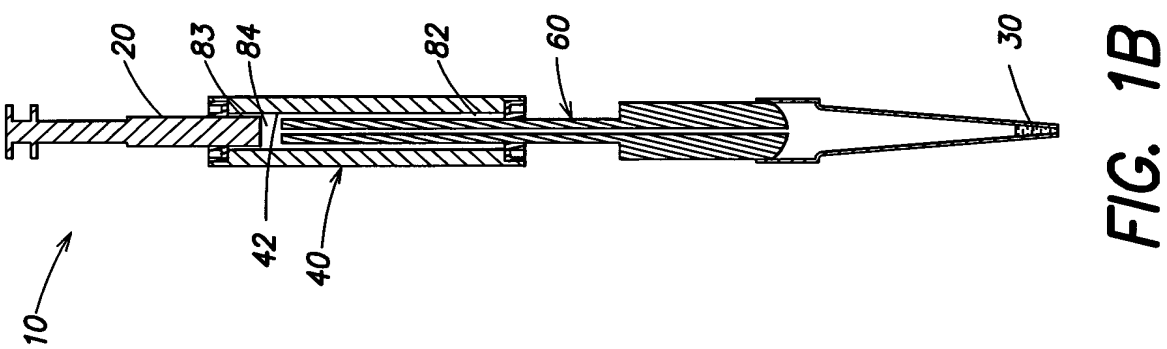


FIG. 1B

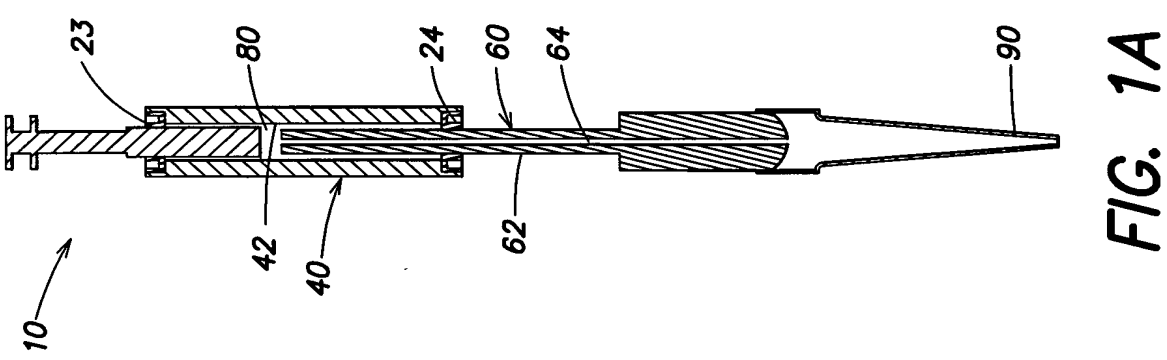


FIG. 1C

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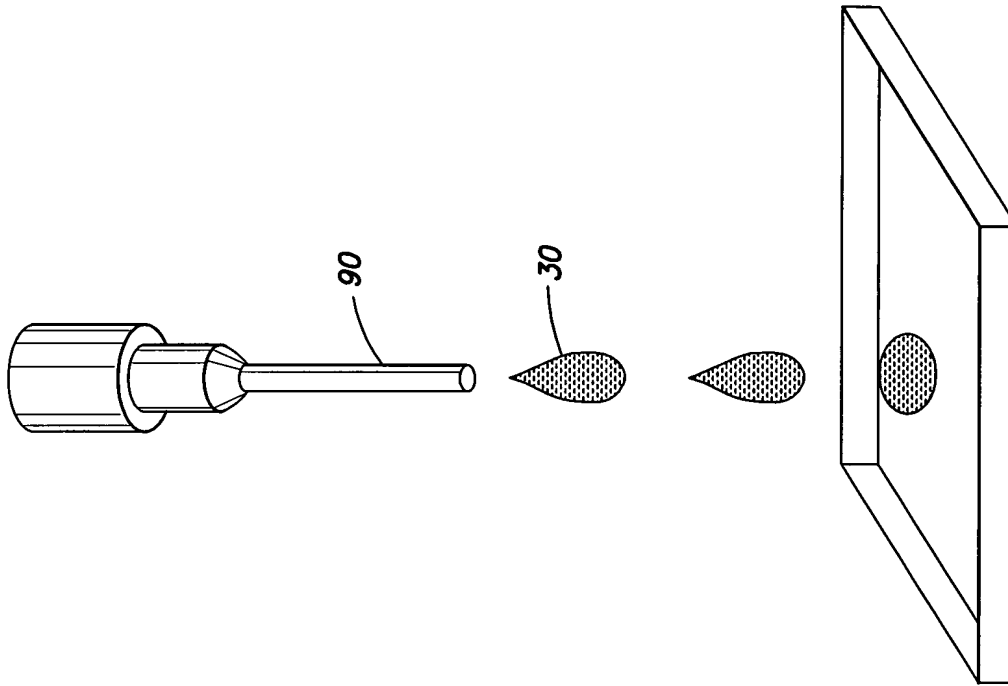


FIG. 2B

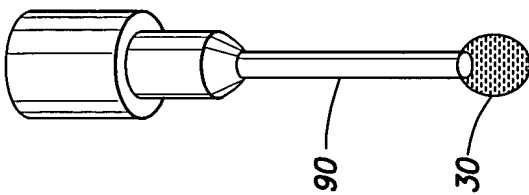


FIG. 2A

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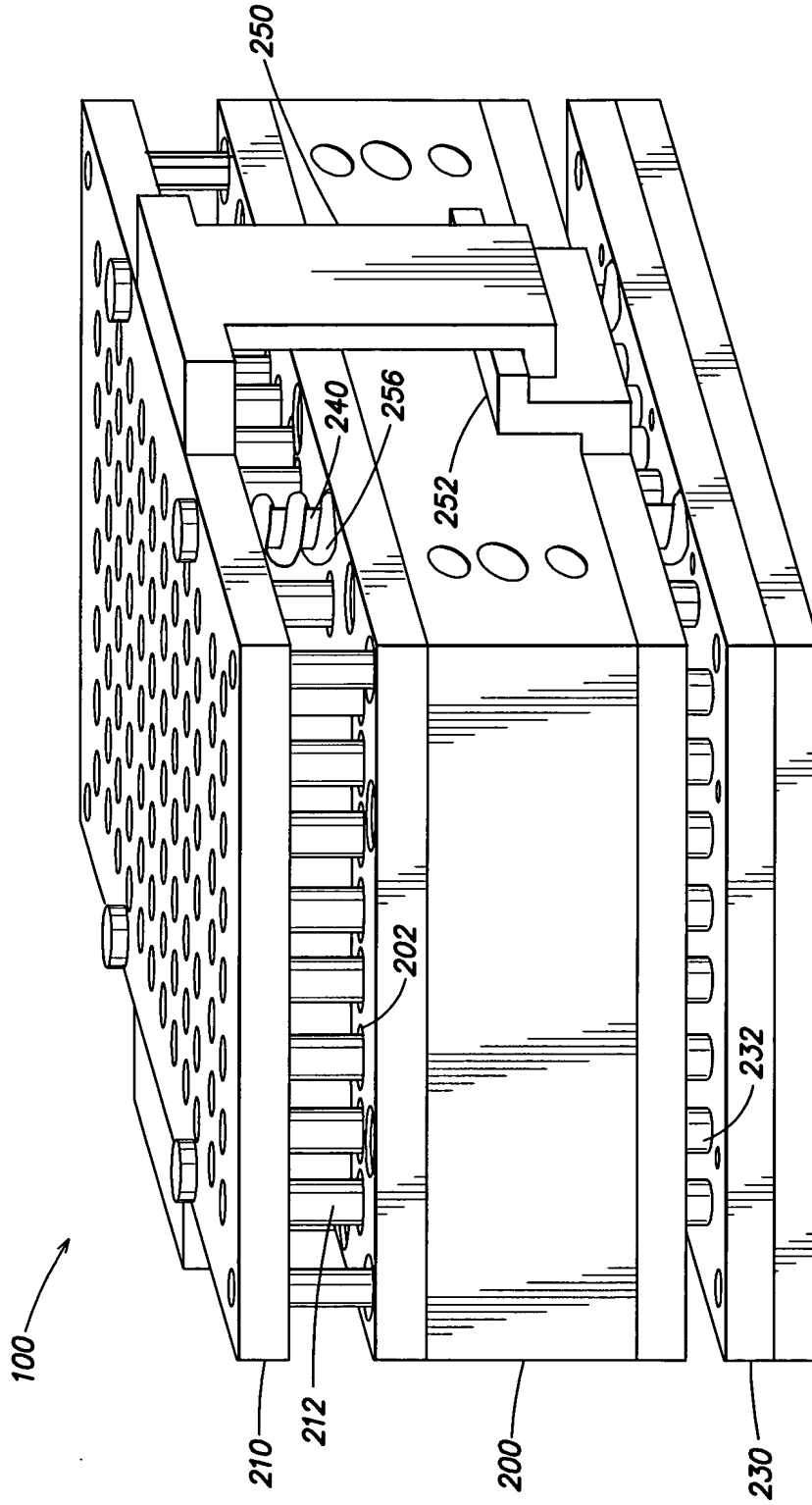


FIG. 3

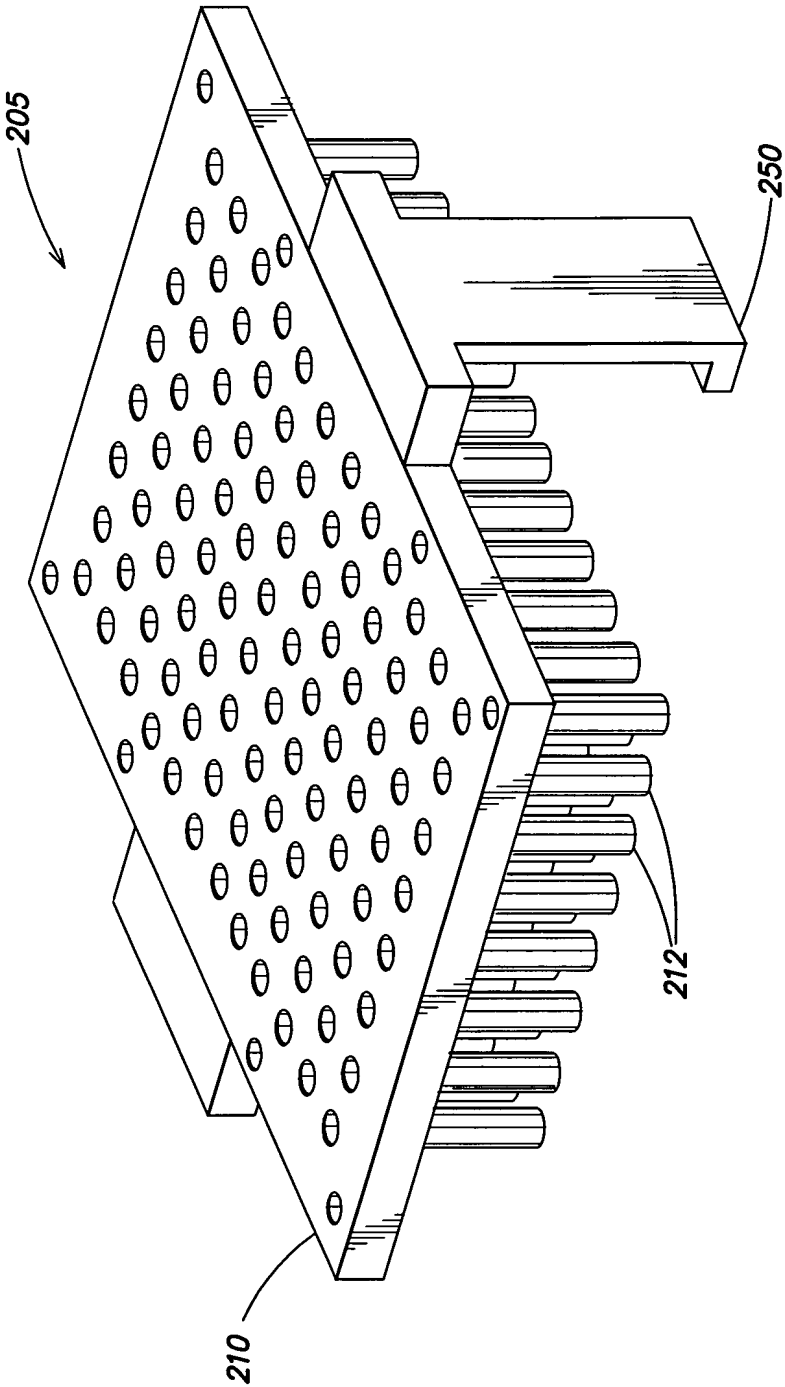


FIG. 3A

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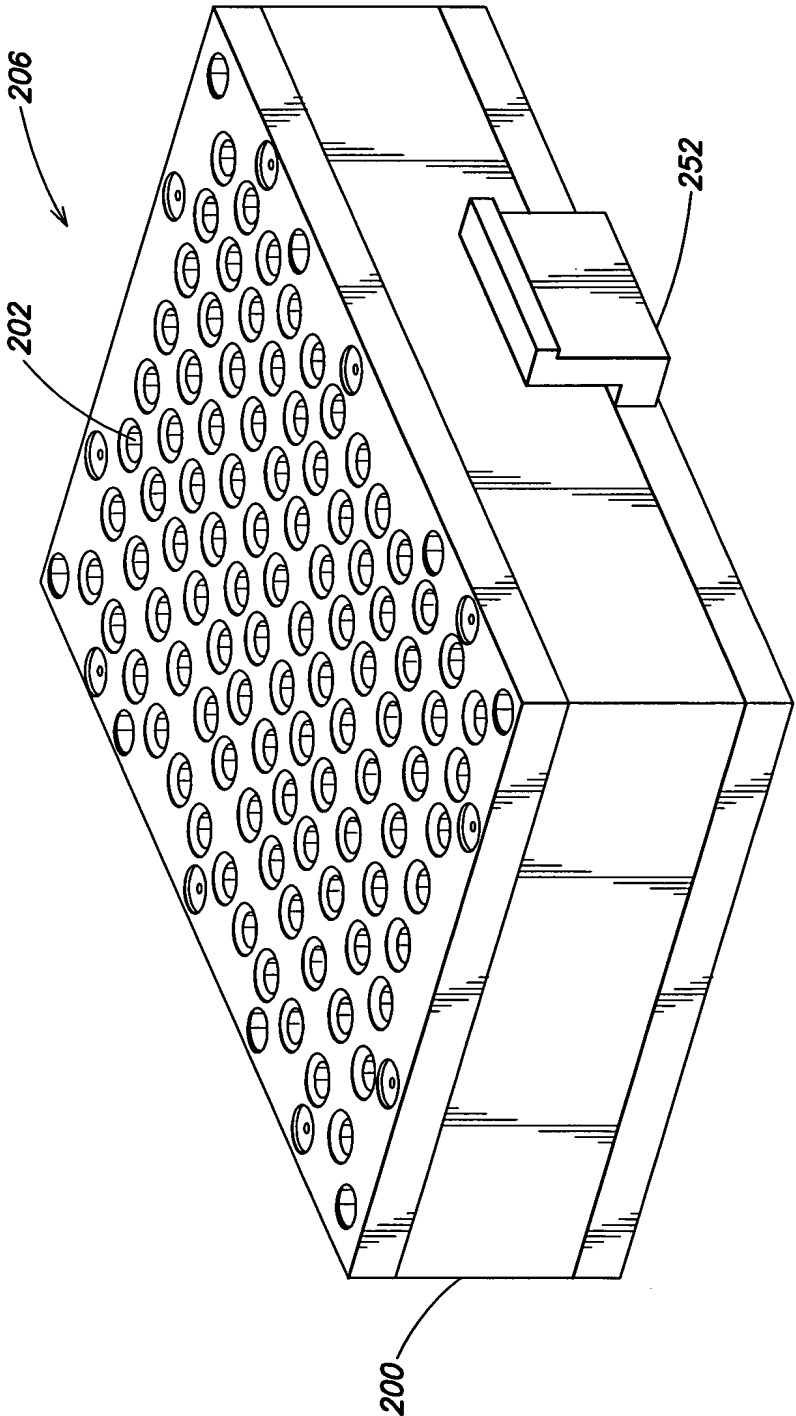


FIG. 3B

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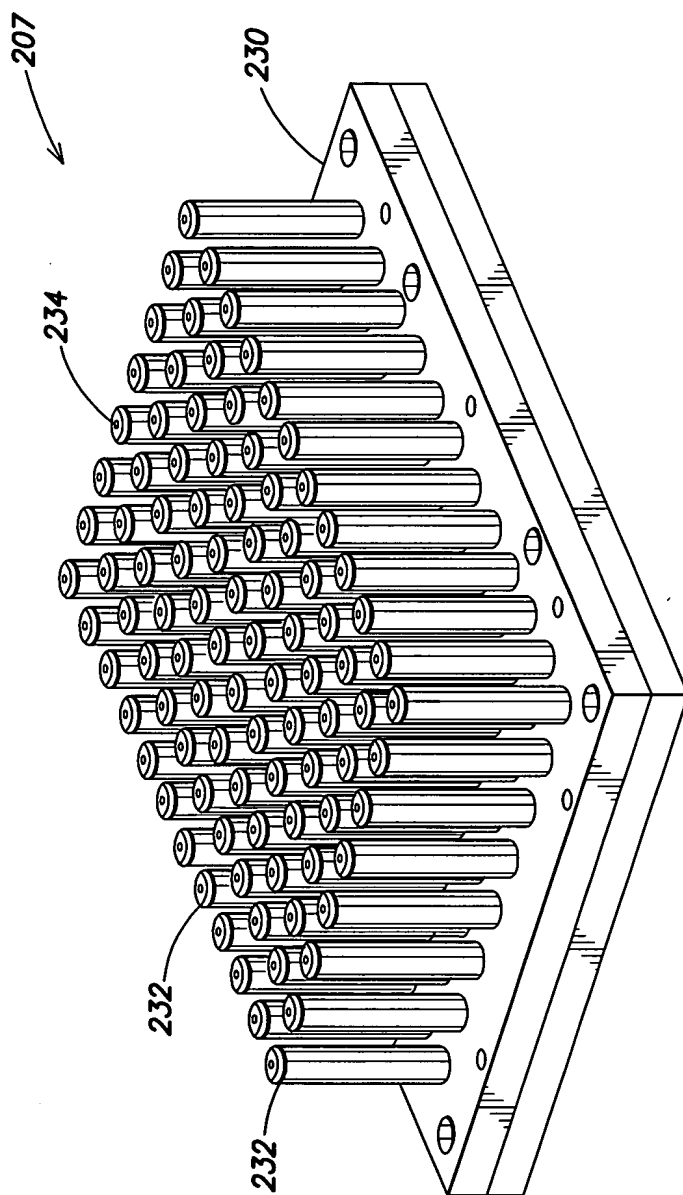


FIG. 3C

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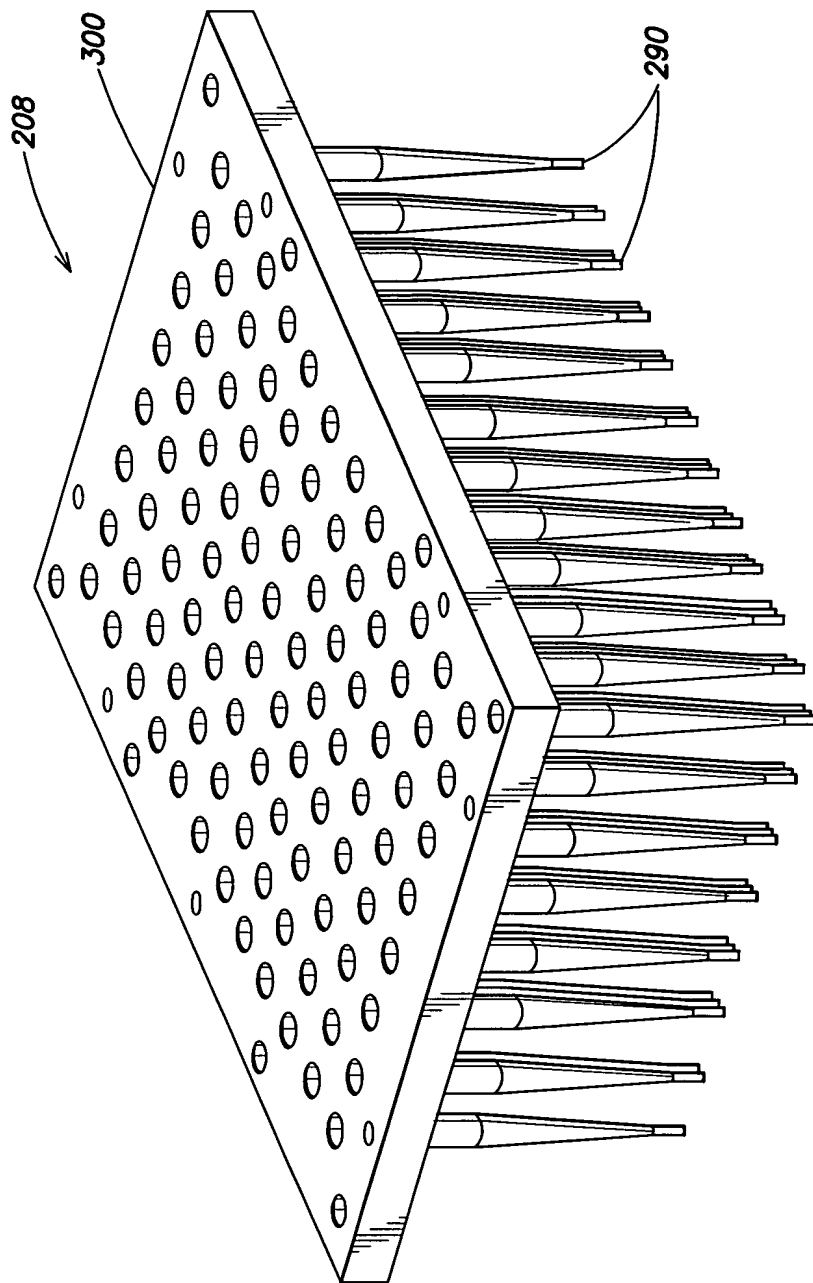


FIG. 3D

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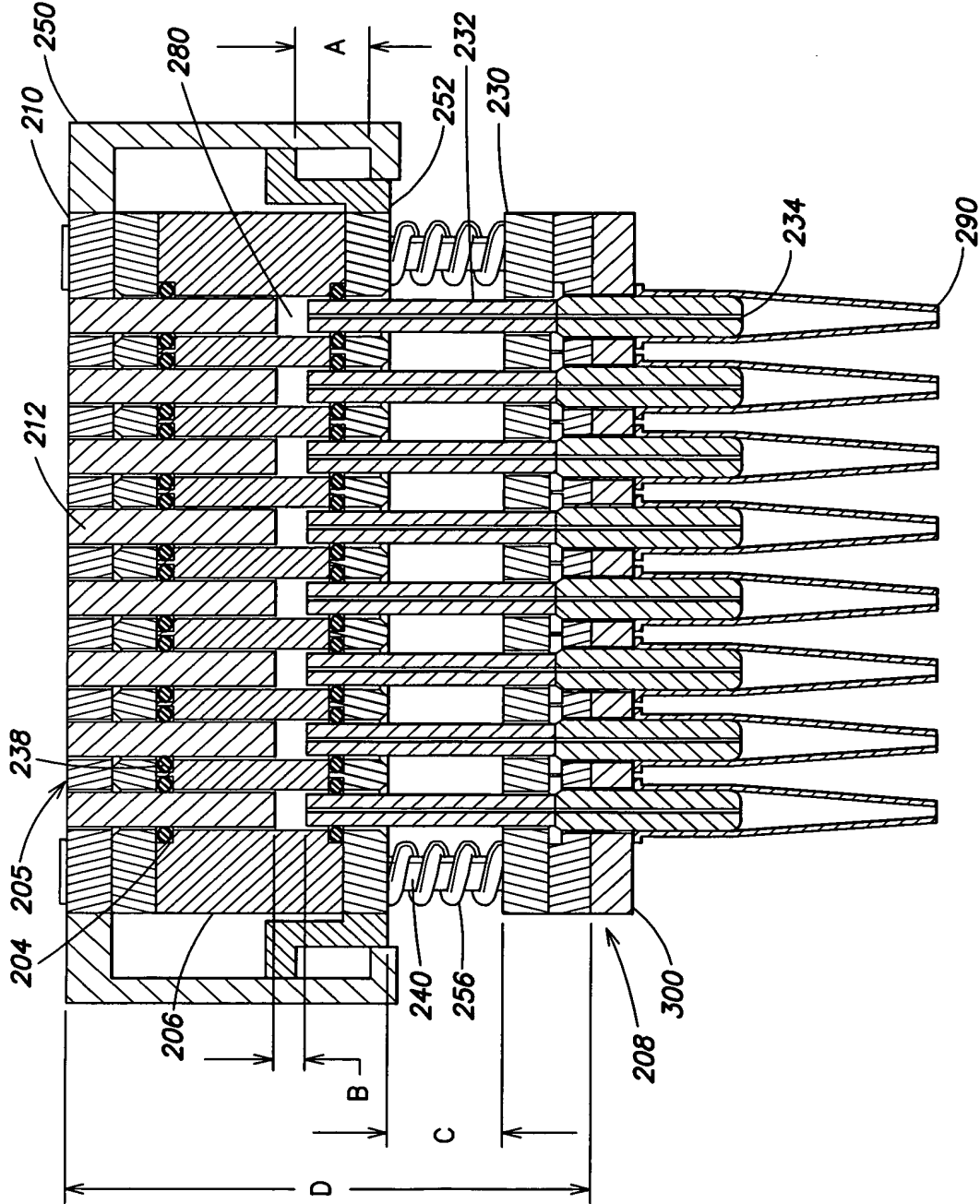


FIG. 4A

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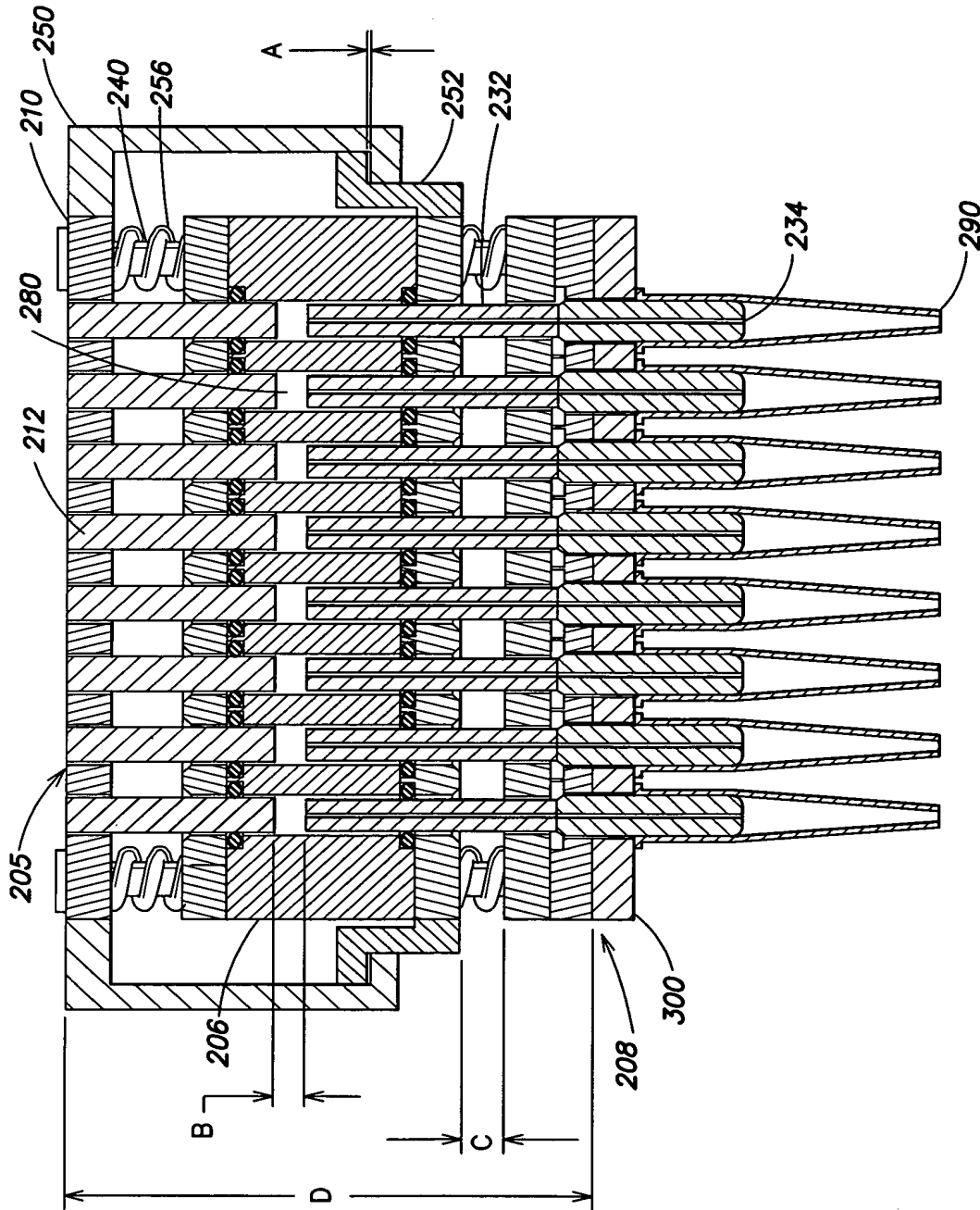


FIG. 4B

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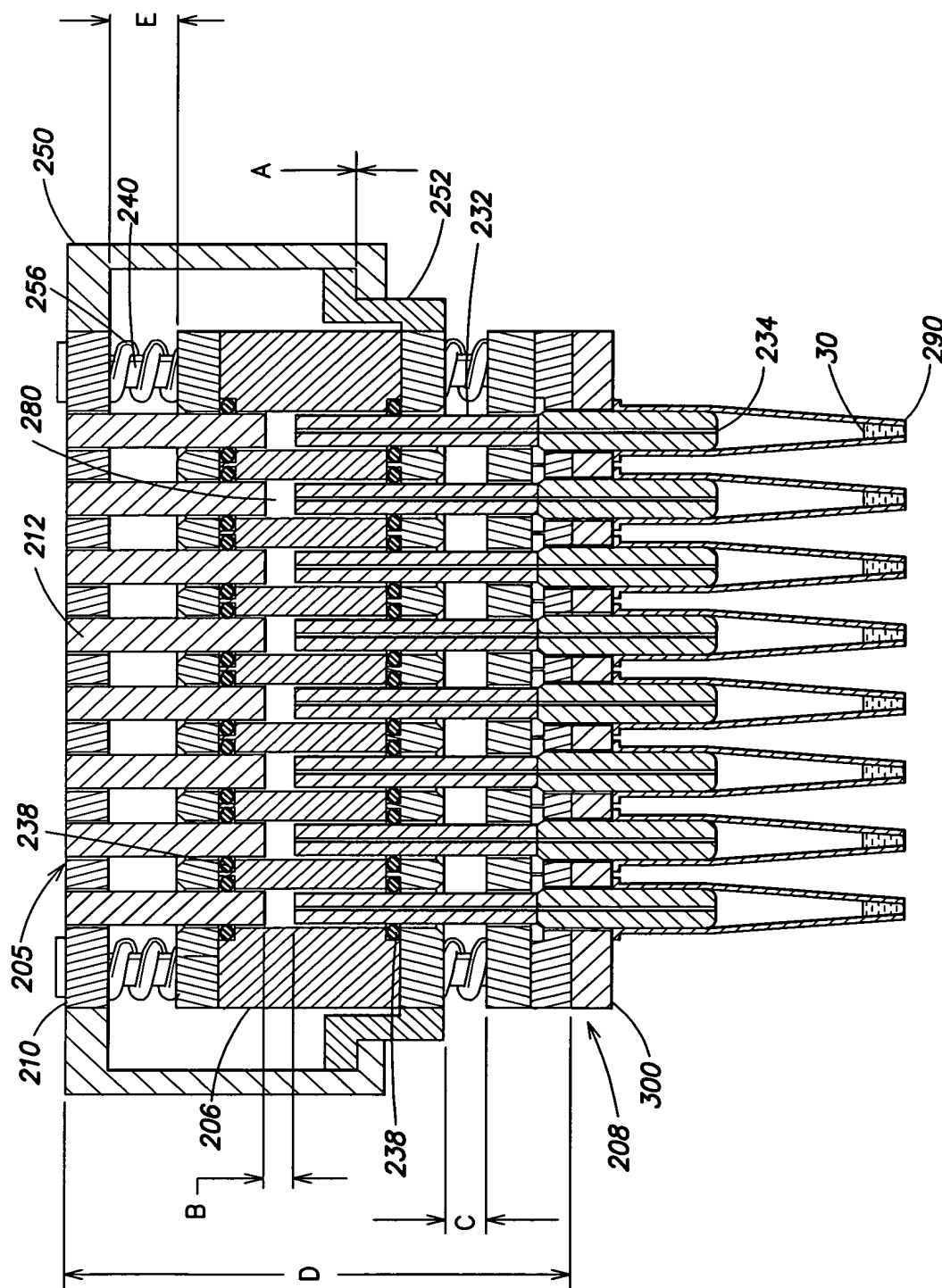


FIG. 4C

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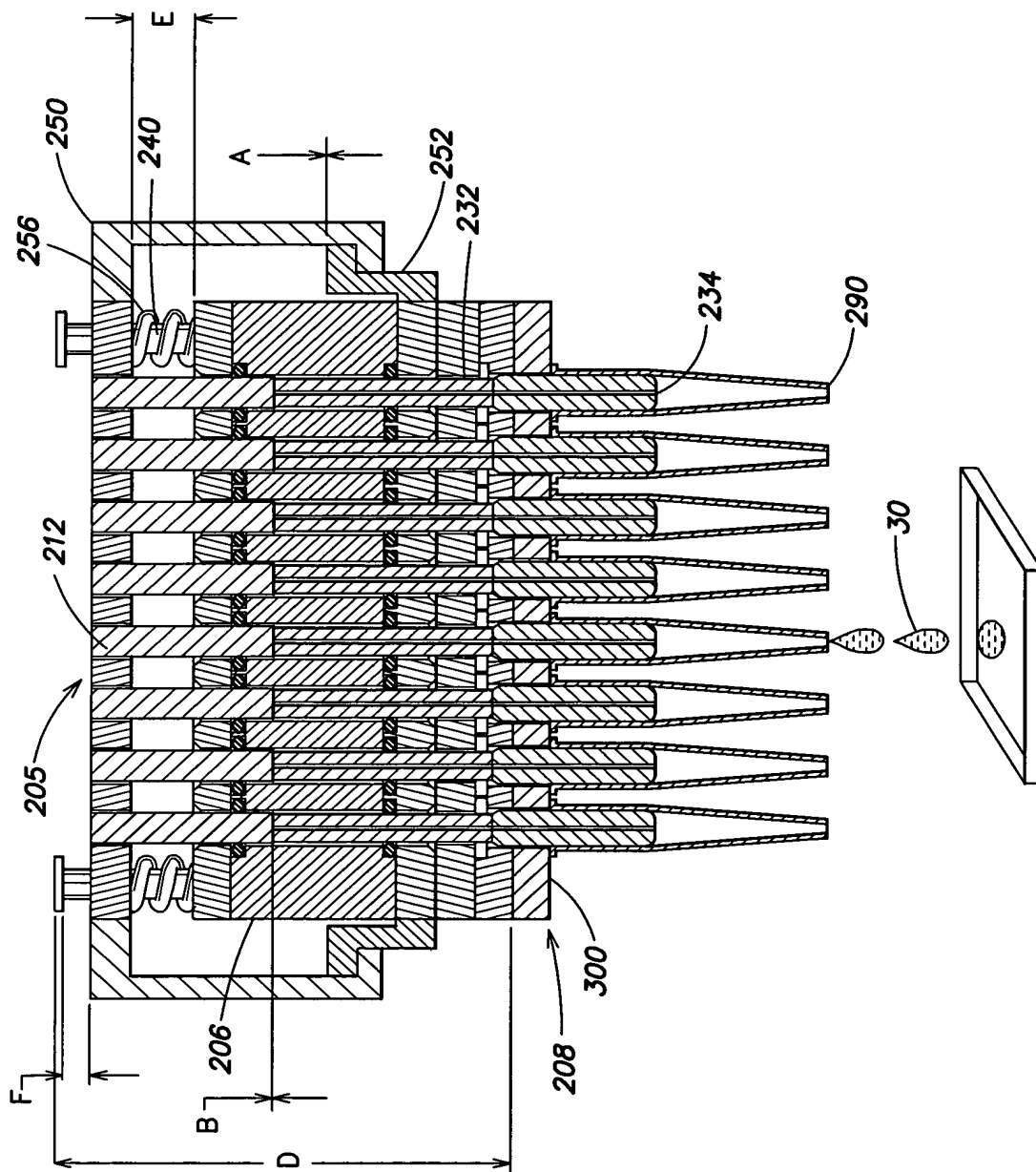


FIG. 4D

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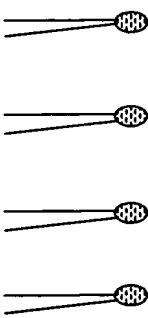
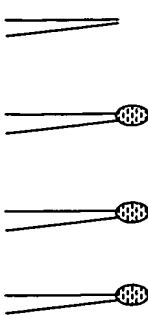


















Cross Section	Diameter (Inches)	Cross Sectional Area (Square Inches)	Res (uL/ inch)	Res (mm/ uL)	Flow Max (uL/sec)	Maximum Tip Escape Velocity (meters/sec) for tip diameters (inches) 0.020 0.016 0.012 0.010
Hypothetical Fine Resolution Conventional Pipetter	0.033	0.0009	14	1.8	20	
Conventional Pipetter	0.062	0.003	50	0.51	69	
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						

FIG. 5A

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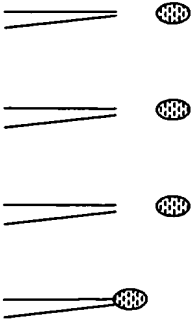
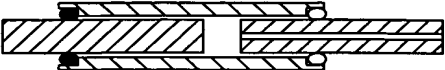
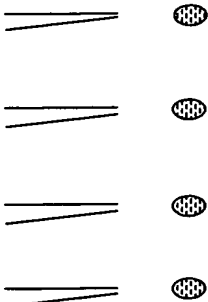
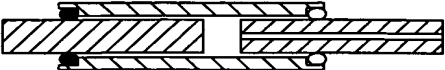
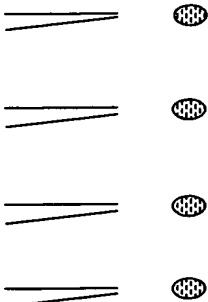
Cross Section	Diameter (Inches)	Cross Sectional Area (Square Inches)	Res (uL/ inch)	Res (mm/ uL)	Flow Max (uL/sec)	Maximum Tip Escape Velocity (meters/sec) for tip diameters (inches) 0.020 0.016 0.012 0.010
<div>Conventional Pipetter</div> 	0.125	0.0123	202	0.13	282	<div>1.4 2.3 4 6</div> 
<div>PRESENT INVENTION</div> <div>Bulk Mode</div> 	0.184	0.026	454	0.062	635	<div>3 5 9 13</div> 
<div>Differential Mode (fine resolution)</div> 	0.033	0.0009	14	1.8	20	<div>0.10 0.16 0.29 0.41</div> 

FIG. 5B

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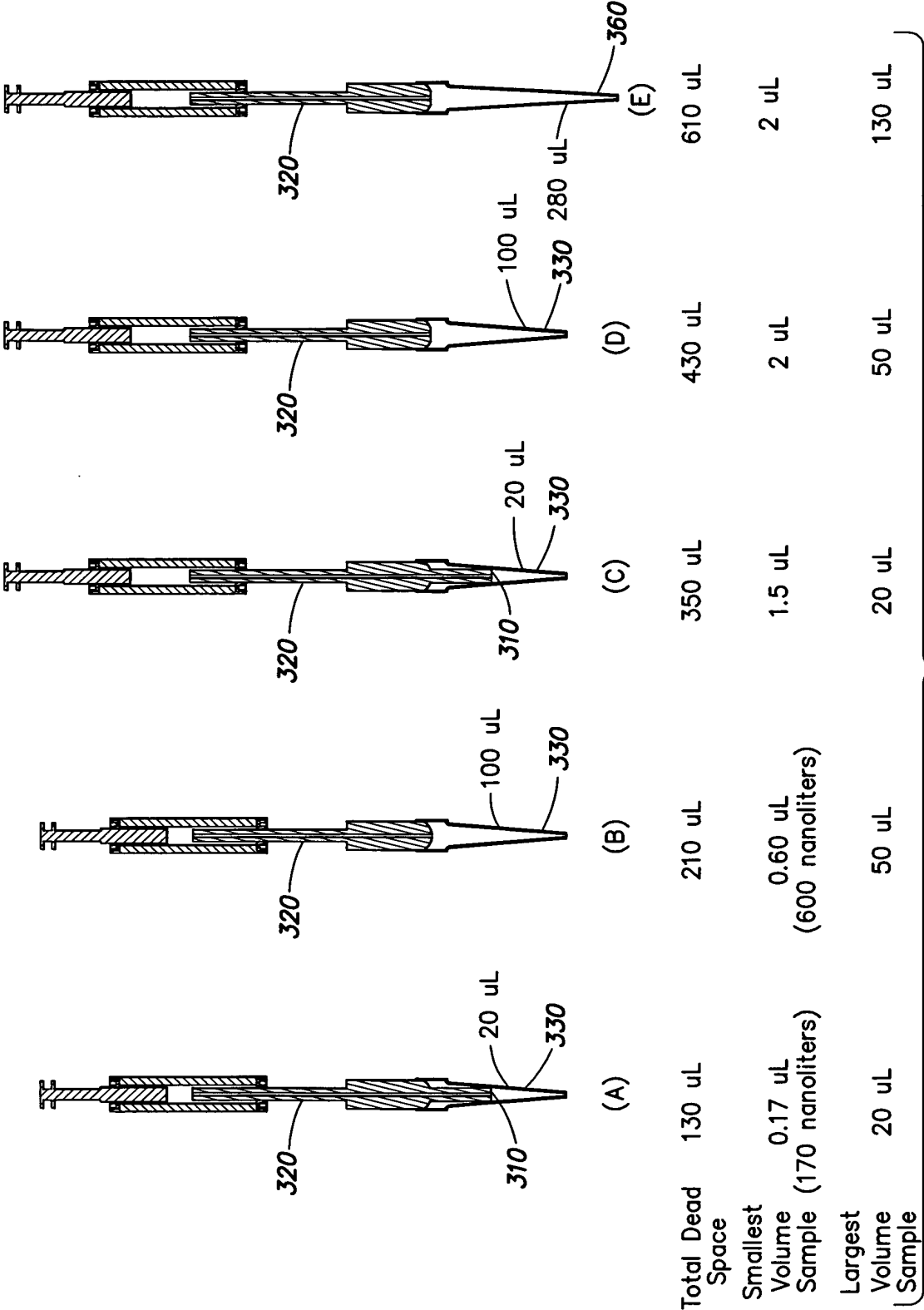
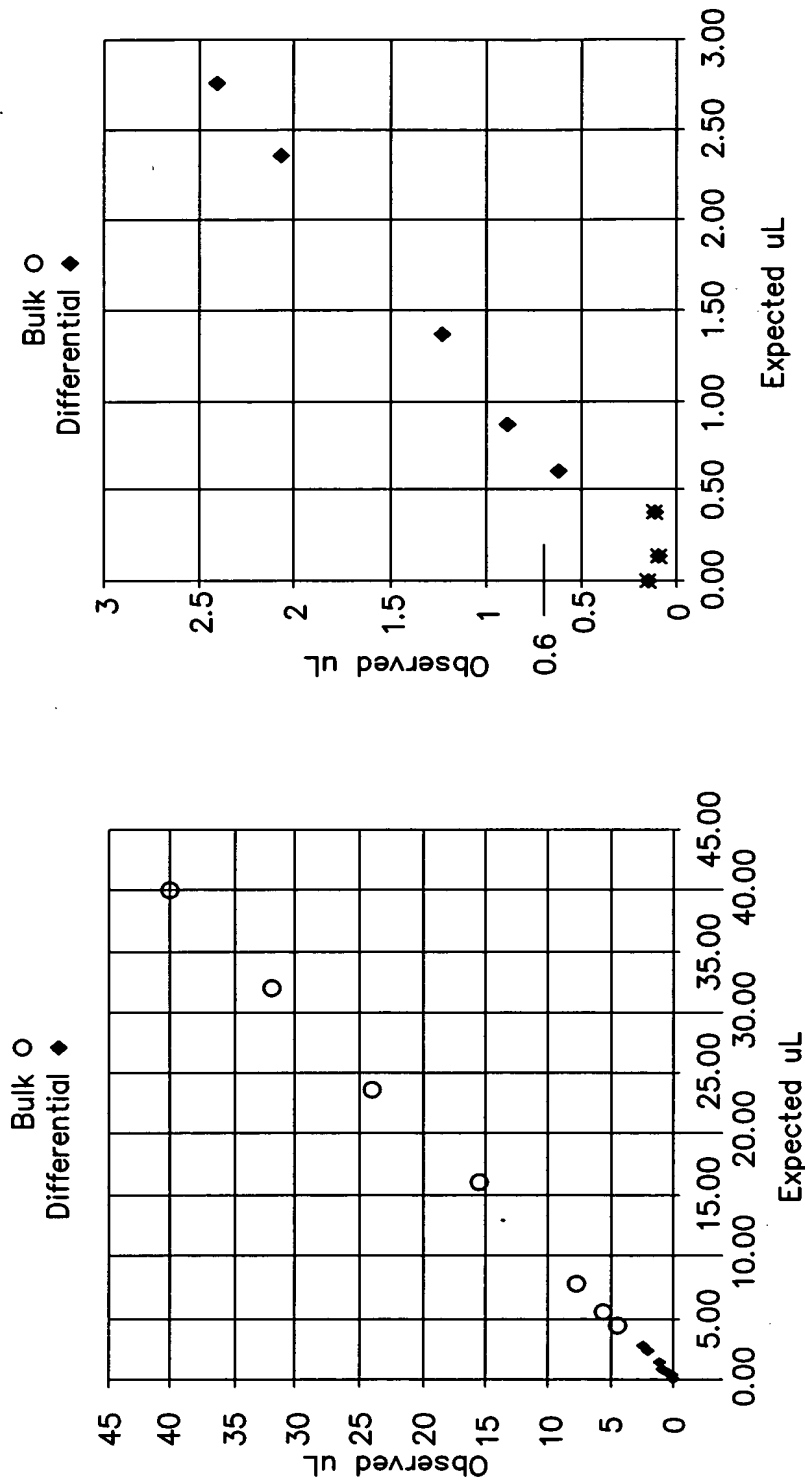


FIG. 6

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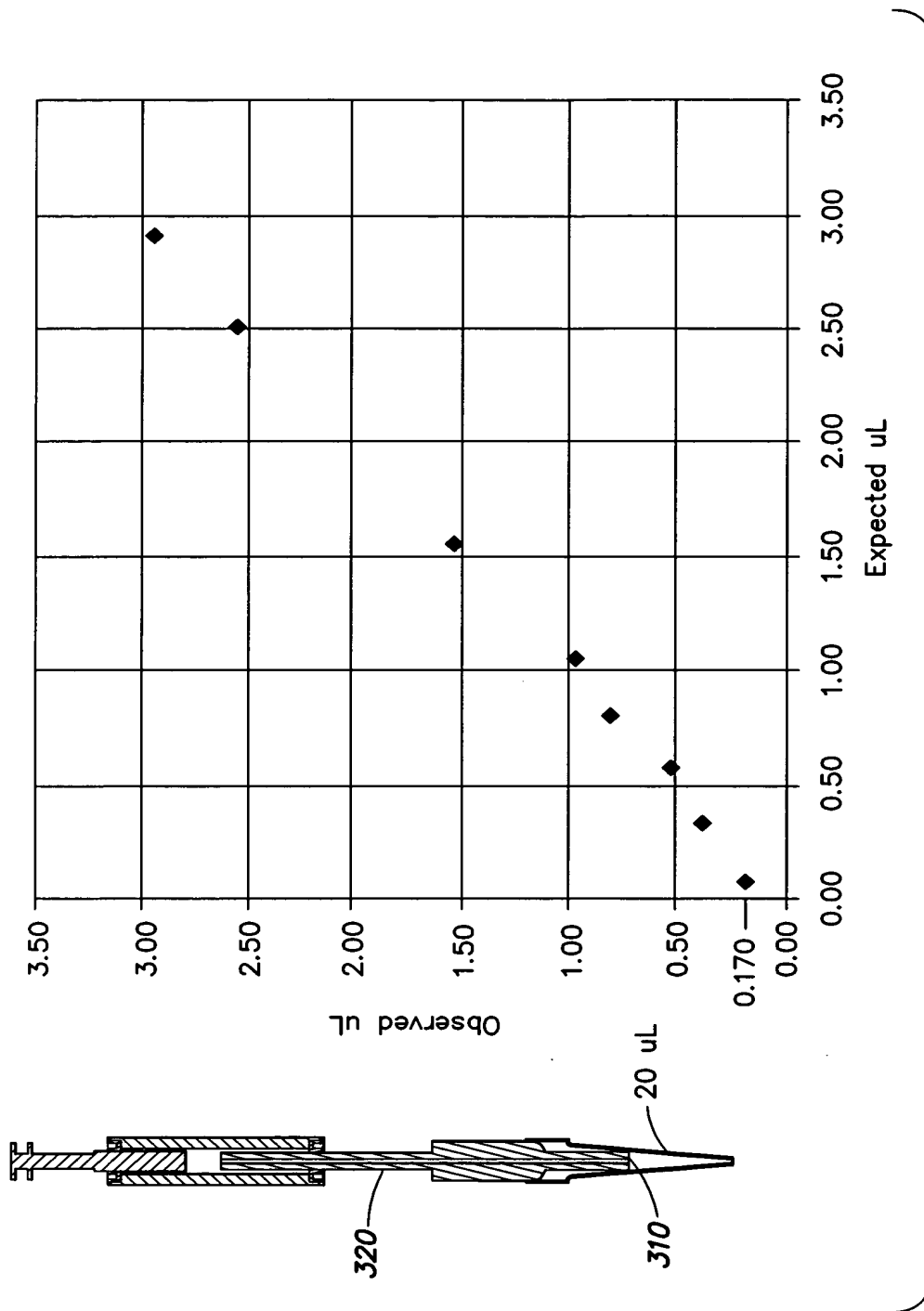


FIG. 8

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Dispense Precision in DRD BULK MODE Underwater
in Large 5 mL (5,000 uL) Internal Air Space Pipette
Standard Deviaton 1.83 uL CV 3.8%

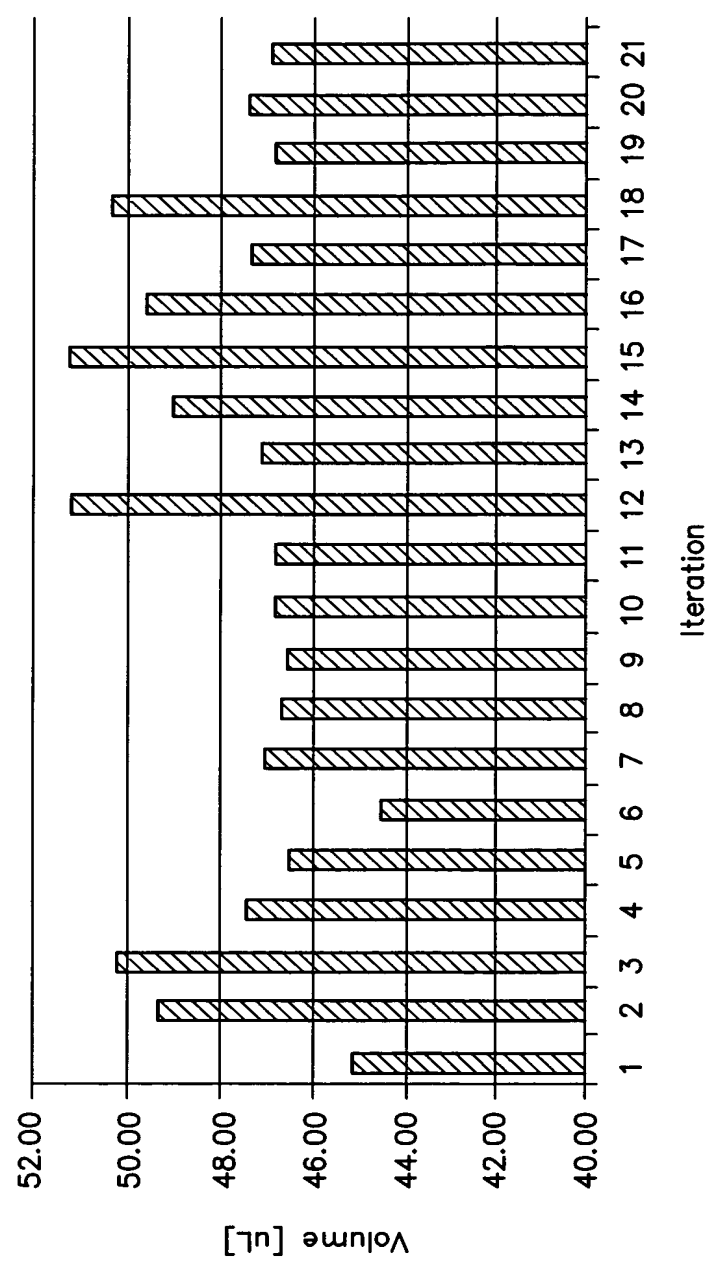


FIG. 9A

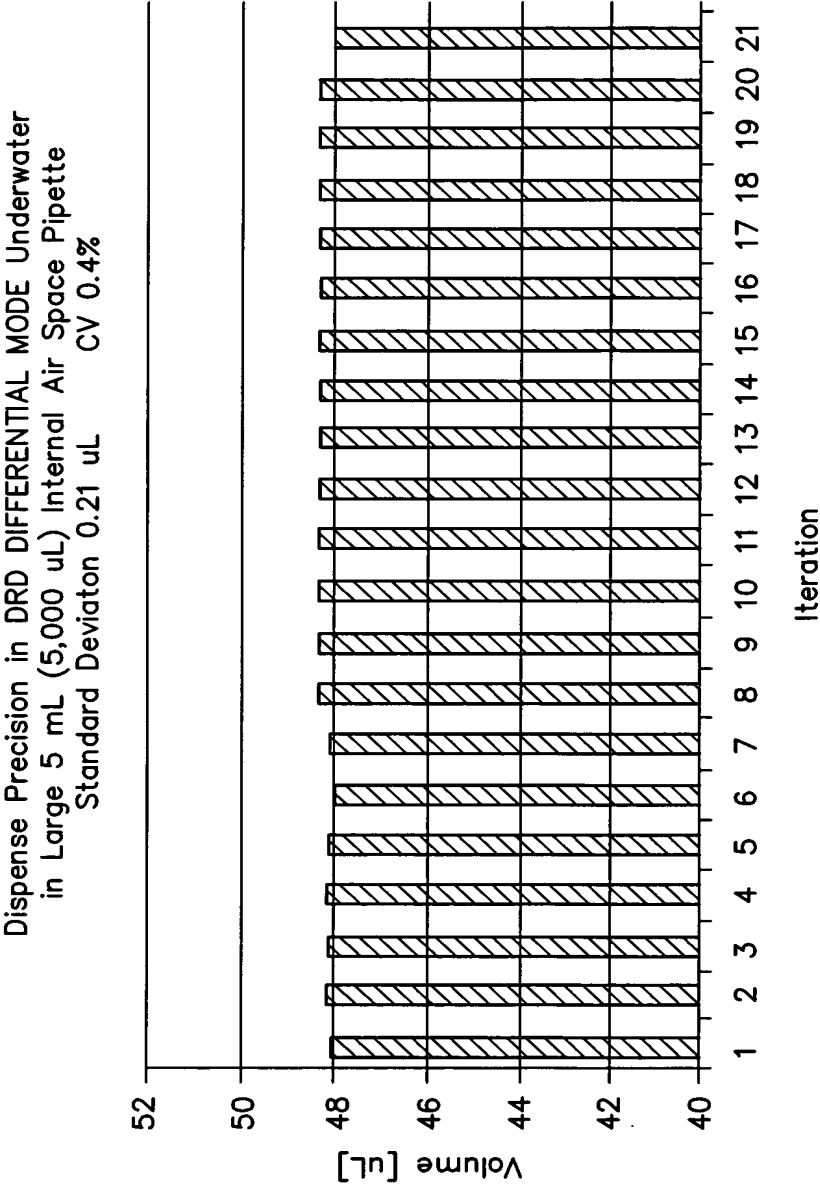
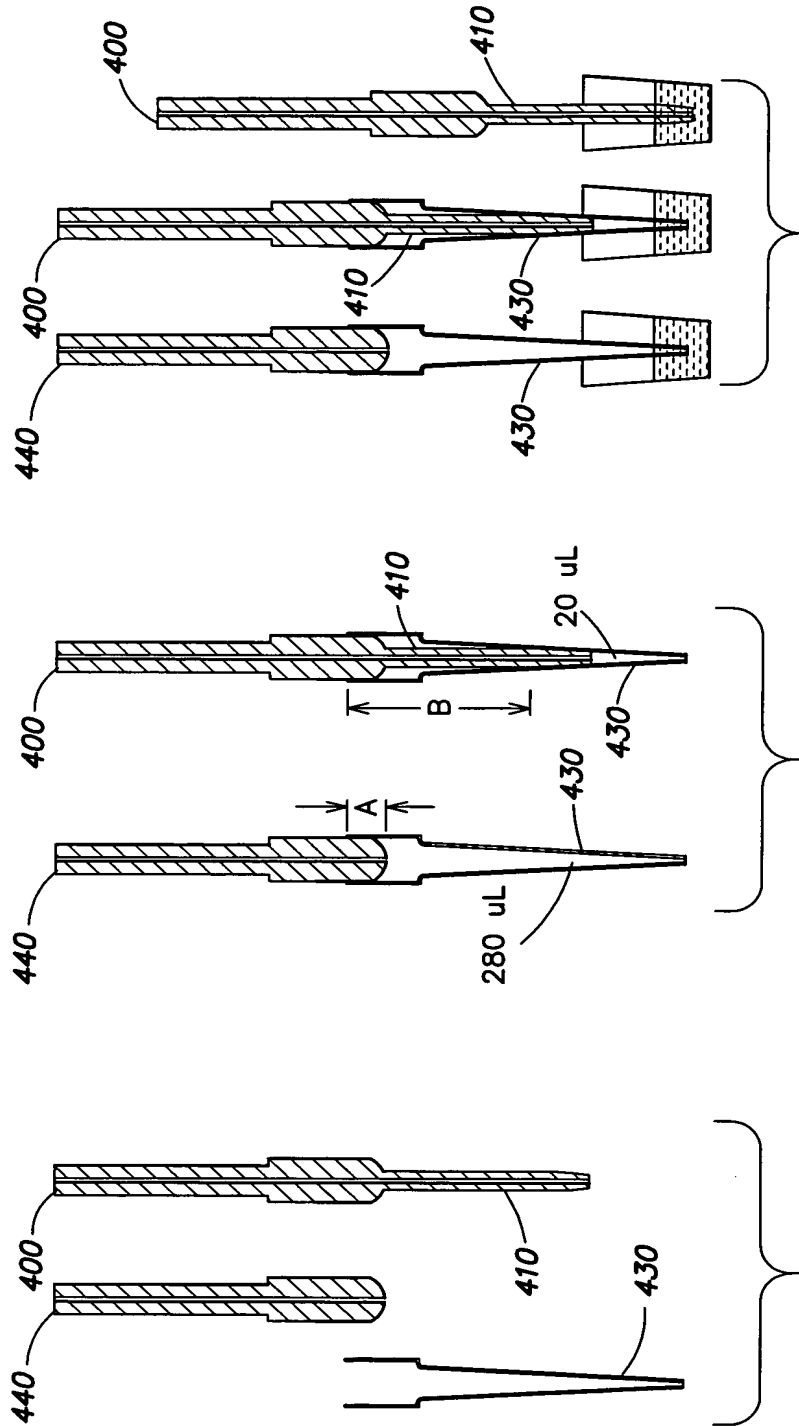


FIG. 9B

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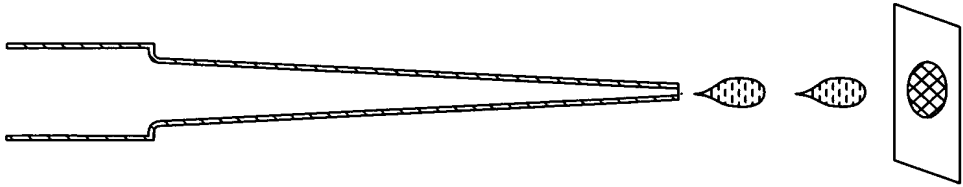


FIG. 11.4

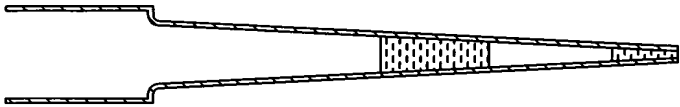


FIG. 11.3

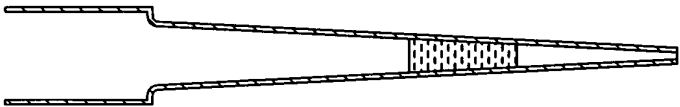


FIG. 11.2

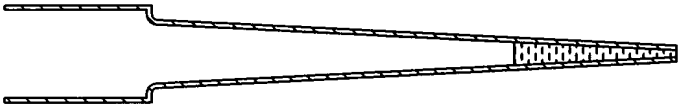


FIG. 11.1

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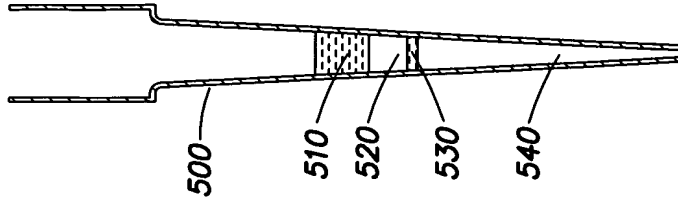


FIG. 12.1

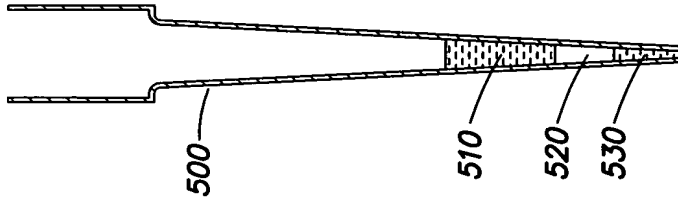


FIG. 12.2

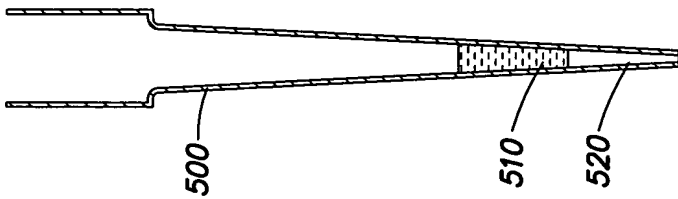


FIG. 12.3

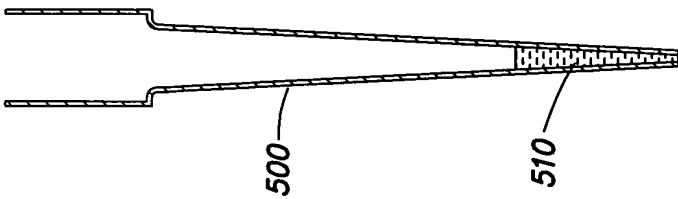


FIG. 12.4

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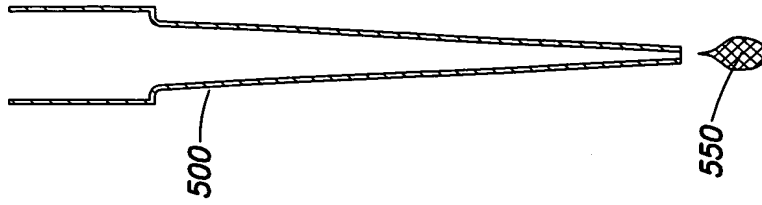


FIG. 12.8

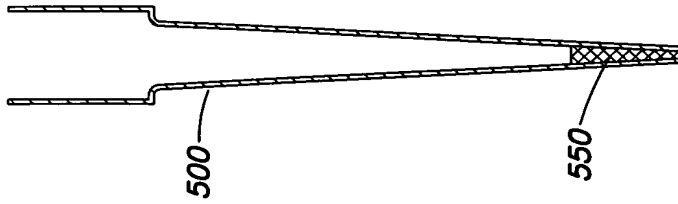


FIG. 12.7

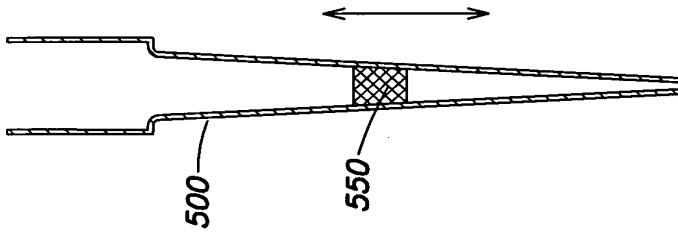


FIG. 12.6

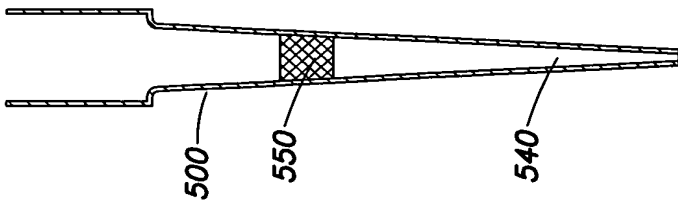


FIG. 12.5

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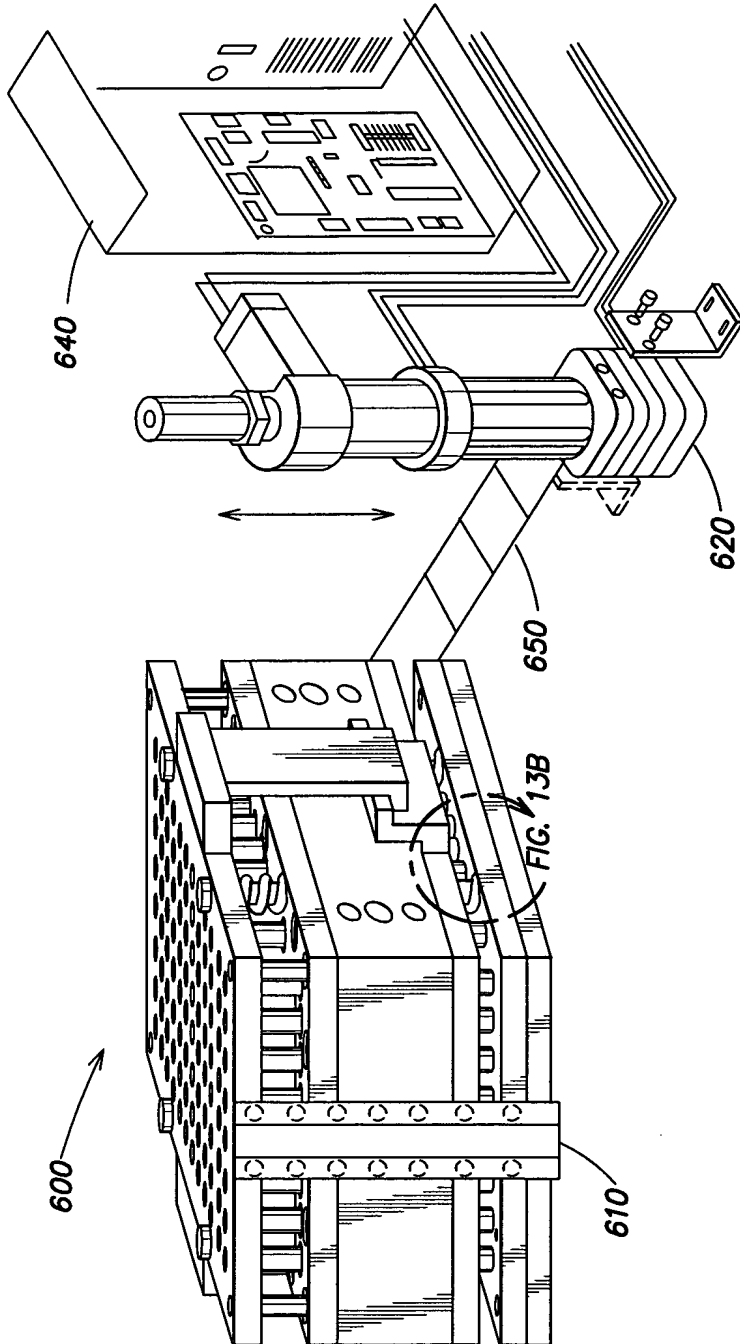


FIG. 13A

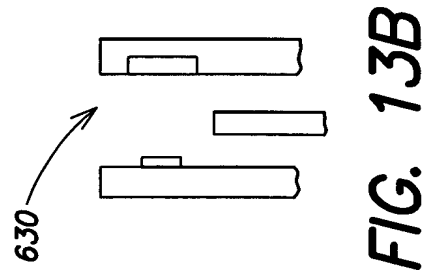


FIG. 13B